

# BRIGHT STEELS

## *1020 Carbon steel*

Typical Analysis (Ave. values %)	C	Si	Mn	P	S
	0.20	0.25	0.45	0.04	0.04
NEAREST STANDARD	AS	AISI	BS	DIN	
	M1020	1020	070M20 EN3B	1.0402 C22	

<b>DESCRIPTION</b>	Cold finished (drawn or turned and polished) mild steel. Suitable for case hardening. Welds readily. 1020 is a general purpose low tensile mild steel with a tensile strength in the range of 430 - 790 MPa, and Brinell hardness range 125 - 230. 1020 is not suitable for quench and temper applications. Normally used in the as supplied condition.
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<b>APPLICATIONS</b>	General engineering components, machinery parts, shafts, camshafts, pins, ratchets, spindles, axles & small gears.
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<b>MECHANICAL PROPERTIES</b> (Ave. values)	Condition	Tensile Strength MPa	Yield Strength MPa	Elongation %
	Cold drawn	430-790	340-610	10-13
	Turned & Polished	410-560	230-330	22

<b>HEAT TREATMENT</b>	Carburize	900-950°C. Furnace or Air cool
	Harden	780-800°C Water quench.
	Temper	180-210°C air cool

<b>WELDING</b>	Readily weldable, use Bohler FOX OHV electrodes or EMK-6 for MIG or TIG welding.
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<b>SIZE RANGE</b>	Round	4.76 to 254 mm
	Flat	10 x 2 to 101.6 x 76.2 mm
	Square	6.35 to 150 mm

## 1030 Carbon steel

Typical Analysis (Ave. values %)	C	Si	Mn	P	S
	0.30	0.25	0.75	0.04	0.04
NEAREST STANDARD	AS	AISI	BS	DIN	
	M 1030	1030	EN5B	1.0528 C30	

<b>DESCRIPTION</b>	Cold finished (drawn or turned and polished) carbon steel. The higher carbon content of 1030 make this grade stronger than 1020 and is suitable for induction hardening in sizes below 38 mm Dia. 1030 is normally used in the as supplied condition with a tensile strength of 520-850 MPa
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<b>APPLICATIONS</b>	General engineering components, machinery parts, shafts, camshafts, pins, ratchets, spindles, axles, small gears, & hydraulic cylinders
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<b>MECHANICAL PROPERTIES</b> (Ave. values)	Condition	Tensile Strength MPa	Yield Strength MPa	Elongation %
	Cold drawn	520-850	410-670	10-12
	Turned & Polished	500-630	250-350	20

<b>HEAT TREATMENT</b>	Carburize	Not Recommended
	Harden	850-880°C Water quench.
	Temper	180-210°C air cool

<b>WELDING</b>	Readily weldable, use Bohler FOX OHV electrodes or EMK-6 for MIG or TIG welding.
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<b>SIZE RANGE</b>	Round	4.67 to 152.4 mm
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## 1045 Carbon steel

Typical Analysis (Ave. values %)	C	Si	Mn	P	S
	0.45	0.25	0.75	0.04	0.04
NEAREST STANDARD	AS	AISI	BS	DIN	
	1045	1045	080A47 EN43B	1.0503 C45	

<b>DESCRIPTION</b>	1045 is a medium tensile carbon steel with good strength and impact properties. Supplied in the cold drawn or turned and polished condition, with a typical tensile strength range of 600 - 950 Mpa. Good machinability.
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<b>APPLICATIONS</b>	Applications requiring flame or induction hardening. High strength shafts, hydraulic rams, camshafts, pins & spindles
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<b>MECHANICAL PROPERTIES</b> (Ave. values)	Condition	Tensile Strength MPa	Yield Strength MPa	Elongation %
	Cold drawn	640-950	500-760	8-9
	Turned & Polished	600-720	300-440	14

<b>HEAT TREATMENT</b>	Carburize	Not suitable
	Harden	850-860°C. Oil or Water quench, 54-60 R/C
	Harden (Induction)	820-850°C Water quench, 54-60 R/C
	Temper	180-210°C air cool

<b>WELDING</b>	Limited to repair work, use Bohler EV-63-refer Bohler welding literature
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<b>SIZE RANGE</b>	Round	6.35 to 152.4 mm
	Square	25.4 to 38.1 mm
	Hexagon	24 to 50.8 mm A/F

## 1214 Free machining

Typical Analysis (Ave. values %)	C	Si	Mn	P	S
	0.15	0.10	1.0	0.07	0.30
NEAREST STANDARD	AS	AISI	BS	DIN	
	1214	~1213	220M07 EN1A	1.0715 95Mn28	

<b>DESCRIPTION</b>	1214 is cold finished (drawn or turned and polished) free machining low tensile 370 - 750 MPa mild steel. Generally used in the as supplied condition.
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<b>APPLICATIONS</b>	A large range of machined products where high volume is required from automatics.
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<b>MECHANICAL PROPERTIES</b> (Ave. values)	Condition	Tensile Strength MPa	Yield Strength MPa	Elongation %
	Cold drawn	400-750	290-580	7-9
	Turned & Polished	370-510	230-300	18

<b>HEAT TREATMENT</b>	Carburize	900-920°C. Furnace or Air cool
	Harden	780-800°C Water quench.
	Temper	180-210°C air cool

<b>WELDING</b>	Not Recommended
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<b>SIZE RANGE</b>	Round	3.18 to 152.4 mm
	Square	6 to 101.6 mm
	Hexagon	6.35 to 101.6 mm A/F

TOLERANCES for bright bar	Rounds			Square	Hex	Flat
	Precision Ground	Cold drawn	Turned & Polished			
	h8	h10	h11	h11	h11	h11
	Tolerance mm					
	Dia/Cross section	h7	h8	h9	h10	h11
	≤ 3	+0 / -0.010	+0 / -0.014	+0 / -0.025	+0 / -0.040	+0 / -0.060
	>3 - ≤6	+0 / -0.012	+0 / -0.018	+0 / -0.030	+0 / -0.048	+0 / -0.075
	>6 - ≤10	+0 / -0.015	+0 / -0.022	+0 / -0.036	+0 / -0.058	+0 / -0.90
	>10 - ≤18	+0 / -0.018	+0 / -0.027	+0 / -0.043	+0 / -0.070	+0 / -0.110
	>18 - ≤30	+0 / -0.021	+0 / -0.033	+0 / -0.052	+0 / -0.084	+0 / -0.130
	>30 - ≤50	+0 / -0.025	+0 / -0.039	+0 / -0.062	+0 / -0.100	+0 / -0.160
	>50 - ≤80	+0 / -0.030	+0 / -0.046	+0 / -0.074	+0 / -0.120	+0 / -0.190
	>80 - ≤120	+0 / -0.035	+0 / -0.054	+0 / -0.087	+0 / -0.140	+0 / -0.220
	>120 - ≤180	+0 / -0.040	+0 / -0.063	+0 / -0.100	+0 / -0.160	+0 / -0.250
	>180 - ≤250	+0 / -0.046	+0 / -0.072	+0 / -0.115	+0 / -0.185	+0 / -0.290
	>250 - ≤315	+0 / -0.052	+0 / -0.081	+0 / -0.130	+0 / -0.210	+0 / -0.320

## LOCATIONS

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Townsville	9-11 Caldwell St Garbutt	4814	Ph (07) 4479 4800	Fax (07) 4725 1316
Perth	29-33 Gauge Cir Canningvale	6155	Ph (08) 9455 8672	Fax (08) 9455 8673
Kewdale	5 Beete St Welshpool	6106	Ph (08) 9350 9582	Fax (08) 9350 9683
Launceston	20 Murphy St Invermay	7248	Ph (03) 6334 3542	Fax (03) 6331 4001

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